REMARKS

This is in full and timely response to the above-identified Office Action. Reexamination and reconsideration in light of the proposed amendments and the following remarks are respectfully requested.

Rejections Under 35 USC § 112

In this response, claims 1-38 have been amended to improve form and to overcome the rejection under 35 USC § 112, second paragraph. The use of indefinite language such as "in particular" and "if need be" has been removed and the lack of antecedent basis problems resolved by amending the dependencies of the claims in question.

Claim Amendments

In this response, claim 1 is amended to call for the reinforcing ring to be made of a material which is rigid relative to the radially inner and the radially outer rings such as to distribute the rope load essentially uniformly over the inner ring. Support for this amendment is found at the bottom of page 26 of the original English language specification.

The advantage which can be achieved with the above type of reinforcing ring, is disclosed on page 3, last paragraph, to page 46, second paragraph, of the originally filed English language specification. With this type of arrangement, it is possible to obtain a pulley that is wear resistant on the one hand and soft and flexible on the other.

In general, an elastomeric layer which shows a substantial resiliency is subject to an enormous amount of wear at the surface where the rope or cable contacts the elastomeric layer. If on the one hand, the elastomeric layer is made

harder and less resilient to improve wear characteristics, the resiliency decreases substantially. As a consequence, large shocks occur each time a clamping socket runs over the circumference of the pulley.

The invention is therefore directed to solving at least this problem. In connection with this invention, it is proposed to use a tire comprising an inner and outer ring and a reinforcing ring which is interposed therebetween. This ring is designed to distribute the radial forces exerted by the rope or cable upon encountering a clamping socket, more evenly over the inner ring which is a soft and resilient material. This even distribution of the force over the inner ring reduces the heat that is produced by the flexing caused by the radially acting forces generated as the pulley rotates.

Rejections Under 35 USC § 102

The rejection of claims 1-3, 6-11, 14-15, 21, 24-25 36 and 38 under 35 USC § 102(b) as being anticipated by Jones, is, to the degree that it still pertains to the claims as amended, is respectfully traversed.

The reference to Jones discloses a tire for a rope pulley having a reinforcing ring 15 embedded therein. Therefore, the portions of the tire which the rejection takes as being the inner and outer rings, are the same material. See column 3, lines 19-24 wherein it is stated:

> The inner circumference of the tire is spaced inwardly from the reinforcing ring 15 and is formed of an inner layer 16 formed of the **same elastomeric material of the main body of the tire . . . ..** **(emphasis added)**.

Further, it is disclosed that this reinforcing ring 15 comprises a fabric web (see column 3, lines 14-19) which is a metal mesh or alternatively an elastomeric material similar to that used in the main body of the tire. This

known arrangement serves to prevent tangential extrusion of the tire upon the application of a radial invert force which could otherwise result in the deformation and stretching of the time and the subsequent disengaging of the tire from the hub and the rim halves – see column 3 lines 35 – 46.

The reinforcing ring prevents local stretching of the ring such that the ring cannot slip on the hub. This prior art reinforcement ring arrangement is thin as compared to the main body of the tire 13 and thus acts as a bandage which provides laterally acting strength to maintain the radial clamping force to hold the tire on the hub. This ring is thin and therefore flexible. Its thickness is insufficient as to provide the claimed effect of distributing the rope load essentially uniformly over the inner ring. In fact, the relative thinness of the reinforcing ring 15 and the indication that it can be a fabric or a web would suggest that load distribution is neither intended nor possible.

Additionally, the edges of the reinforcing ring very closely proximate the surface of the rim halves 11a and 11b and thus would not appear to able to provide an even distribution of the radially acting forces with respect to the outer circumference of the pulley.

Rejections Under 35 USC § 103

1) The rejection of claim 12 under 35 USC § 103(a) as being unpatentable over Jones in view of Nakamura et al. ('038) is respectfully traversed.

In this rejection, it is acknowledged by the PTO that Jones does not disclose that the reinforcing ring is formed by forging. To overcome this admitted shortcoming Nakamura et al. is cited to disclose cold forging of aluminum to increase the resistance and toughness of a surface. However, to suggest that the hypothetical person of ordinary skill in the art would have been motivated to considered using a reinforcement ring of cold forged aluminum in

the Jones arrangement goes beyond the metes and bounds of the § 103 statute and is without rational motivation.

First, the surface of the reinforcement ring 15 is not exposed to wear that would demand surface toughness. The reinforcement ring 15 is embedded in a protective elastomeric case. There is, therefore, no possible motivation to consider a transfer of teachings from Nakamura et al. to Jones.

It is submitted that in order for a prima facie case of obviousness to be established the hypothetical person of ordinary skill must while working with a total lack of any knowledge of the claimed subject matter and without any inventive activity, be able to arrive at the claimed subject matter given the teachings of the references applied. In this instance, there are no such teachings available.

2) The rejection of claim 13 under 35 USC § 103(a) as being unpatentable over Jones in view of JP'4240 is respectfully traversed.

Again, the notion that a reinforcement ring such as that disclosed in Jones could be made of a cast metal to cure a non-existent surface wear/toughness problem cannot be entertained. The above mentioned hypothetical person of ordinary skill simply would not contemplate such a transfer of teachings. Clearly, there is insufficient nexus between the teachings of JP'4240 and Jones to even remotely consider as *prima facie* obvious the use of casting in Jones.

3) The rejection of claim 26 under 35 USC § 103(a) as being unpatentable over Jones in view of Colford ('176), is respectfully traversed.

This rejection is predicated on the unfounded assumption that there is a wear and tear problem associated with the inner ring of the Jones tire

arrangement. It is submitted that, in its deep seated position the inner ring of the tire cannot be envisaged as being exposed to conditions that would lead the person of ordinary skill to consider a transfer of teachings. The surface of the outer ring of the tire may be so exposed, but it cannot be agreed that the inner ring would, in any way, be considered exposed to abrasion to the degree that fiber reinforcement (for example) would be considered.

4) The rejection of claims 27, 28 and 31 under 35 USC § 103(a) as being unpatentable over Jones in view of Lengenfelder, Jr. et al.('225), is respectfully traversed.

This rejection acknowledges that Jones does not disclose a clamping device being associated with the tire. Lengenfelder, Jr. et al. is cited to overcome this admitted shortcoming. The motivation for the hypothetical person of ordinary skill to consider the transfer of teachings is that the split clamping device of Lengenfelder, Jr. et al. would be used to secure the radially outer ring to the pulley body and to ensure proper alignment between the outer ring and the pulley body during assembly.

However, Jones discloses the reinforcement ring as providing an essentially similar function – see column 3, lines 25-46 wherein it is stated that:

> **On assembling** a pulley according to the embodiment the tire is snugly fitted over the outer circumference of the hub 12 and the rim halves 11a and 11b are mounted to the hub 12 by utilization of the fixing means 17 and are brought into clamping engagement with the hub. **As a result the tire is snugly clamped the tire therebetween the rim halves.** Because of the tapered complementary configuration of the side walls of the tire and the rim halves any radially inward force applied to the tire by a pulley rope serves to bring the tire into greater clamping engagement with the rim halves 11a and 11b. The annular reinforcing rings 15 serves in preventing tangential extrusion of the tire an application of the radial inward

> force which would otherwise result in deformation and stretching of the tire and subsequent disengaging of the tire from the hub and rim halves. **The inner layer 16 of elastomeric material defines a locking ring** which serves in insulating the pulley rim halves and the hub from any vibration created by engagement of the tire with a pulley rope and serves in ensuring a strong frictional engagement between the outer circumference of the hub 12 and the inner circumference of the tire 13. **(emphasis added)**

In light of this disclosure, it cannot be seen that any problem is disclosed that would lead the person of ordinary skill toward the transfer of teachings purported to flow from the combination of references applied in this rejection.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed Cir. 1992). M.P.E.P. § 2143.01

It is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness in this and all of the preceding rejections under § 103.

Allowable Subject Matter

The indication that claims 16-20, 22-23, 29-30, 32-35 and 37 contain allowable subject matter is noted with appreciation. It is deemed premature to consider placing all of these claims in independent form. Claim 16, however, has been written into independent form. This amendment such as to place claims 16-18 in *prima facie* allowable form.

Newly Added Claims

New claims 39-44 are added in this response. Full support for these claims is found in the originally filed specification and drawings.

The newly presented claims are allowable over the art of record in at least that claim 40 calls for the reinforcing ring of claim 1 to have a non-uniform cross-section and to be thicker at the sides than in the middle. Claim 41 calls for the reinforcing ring to have an indented cross-sectional profile. Clearly, the flat uniform cross-sectional reinforcing ring 15 of Jones neither discloses nor suggests such structures.

Newly presented independent claim 42, on the other hand, is such as to call for a pulley body which has an outer circumferential surface; and a tire which is disposed on the outer circumferential surface and which comprises: an outer ring; a separate inner ring; and a reinforcing ring interposed between the outer ring and the inner ring, the reinforcing ring being made of a material which is rigid relative to the radially inner and the radially outer rings and which has at least one portion which is at least as thick as the radially outer ring, the radially inner ring being made of a first material, the radially outer ring being made of a second material having a greater Shore hardness than the material of the radially inner ring.

Claims 43 and 44 respectively require that the reinforcing ring has a non-uniform cross-section and is thicker at the sides than in the middle; and the reinforcing ring has an indented cross-sectional profile.

As noted above, these structures are neither disclosed nor suggested by the art applied.

Conclusion

It is submitted that the claims pending before the Patent Office are allowable over the art for at least the reasons advanced above. Accordingly, favorable reconsideration and allowance of this application is courteously solicited.

Respectfully submitted,

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MARKED-UP VERSIONS OF AMENDED CLAIMS

1. (Once amended) A pulley [(1), in particular for aerial tramways, having] **comprising**: a pulley body [(2)] which has a rotationally symmetrical outer circumferential surface [(8)] and a pulley hub [(4)], and having a tire [(3)] which sits on the outer circumferential surface [(8)] and has at least one radially outer and one radially inner ring [(13, 15)] and also a reinforcing ring [(14)], the reinforcing ring being made of a material which is rigid relative to the radially inner and the radially outer rings [(13, 15)], **and which distributes the rope load essentially uniformly over the inner ring,** the reinforcing ring having a diameter which is smaller than the outside diameter of the radially outer ring [(15)], the radially inner ring [(13)] being made of an elastomer, the radially outer ring [(15)] being made of an elastomer or a plastic, and the radially outer ring [(15)] having a greater Shore hardness than the radially inner ring [(13)].

2. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the pulley body [(2)] has two lateral flanks [(9)], between which the outer circumferential surface [(8)] of the pulley body [(2)] extends, and into which the outer circumferential surface [(8)] of the pulley body [(2)] merges.

3. (Once amended) The pulley as claimed in claim 2, [characterized in that] **wherein** at least one of the lateral flanks [(9)] is flat or frustoconical, and in that a flange disk [(12)], which projects radially outward beyond the outer circumferential surface [(8)] of the pulley body [(2)], is detachably fastened to at least one of the lateral flanks [(9)].

4. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the width of the outer circumferential surface [(8)] of pulley body [(2)] corresponds to the width of the radially inner and the radially outer rings [(13, 15)].

5. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the radially inner and the radially outer rings [(13, 15)] are approximately the same width.

6. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the radially outer ring [(15)] has an outer circumferential surface [(32)] which is a surface of rotation and which is concentric to the pulley hub [(4)] in the unloaded state.

7. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the outer circumferential surface [(32)] of the radially outer ring [(15)] contains a rope groove [(38)].

8. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] is embedded in the radially outer or the radially inner ring [(15)].

9. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] is fitted in between the radially outer or [[sic]] the radially inner ring [(15)].

10. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] is a plastic molding [which, if need be, is fiber-reinforced].

11. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] has [[sic]] a sheet-metal formed part.

12. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wher in** the reinforcing ring [(14) has [sic]] **is** a forging.

13. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14) has [sic]] **is** a casting.

14. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] has an outer circumferential surface [(29)] which is designed in such a way that the radially outer ring [(15)] has an approximately constant thickness as viewed over its width.

15. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] has an inner circumferential surface [(26)] which is designed in such a way that the radially inner ring [(13)] has an approximately constant thickness as viewed over its width.

16. (Once amended) [The] A pulley [as claimed in claim 1] **comprising:**

a pulley body which has a rotationally symmetrical outer circumferential surface and a pulley hub, and having a tire which sits on the outer circumferential surface and has at least one radially outer and one radially inner ring and also a reinforcing ring, the reinforcing ring being made of a material which is rigid relative to the radially inner and the radially outer rings, the reinforcing ring having a diameter which is smaller than the outside diameter of the radially outer ring, the radially inner ring being made of an elastomer, the radially outer ring being made of an elastomer or a plastic, and the radially outer ring having a greater Shore hardness than the radially inner ring, [characterized in that]

wherein the reinforcing ring [(14)] consists of two parts [(14a, 14b)] which are joined together along a radial plane and are fastened to one another.

17. (Once amended) The pulley as claimed in claim [15] **16**, [characterized in that] **wherein** the two parts [(14a, 14b)] of the reinforcing ring [(14)] bear directly against one another.

18. (Once amended) The pulley as claimed in claim [15] **16**, [characterized in that] **wherein** the two parts [(14a, 14b)] of the reinforcing ring [(14)] are connected to one another while forming at least one axial intermediate space.

19. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] contains blind openings [(42)] which lead from the lateral flank [(27, 28)] into the reinforcing ring [(14)].

20. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the reinforcing ring [(14)] contains slots which run in the circumferential direction and lead from the lateral [flank] **flanks** [(27, 28)] into the reinforcing ring [(14)].

21. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** at least either the radially outer or the radially inner ring [(13, 15)] is connected to the reinforcing ring [(14)] in a positive-locking manner.

22. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the radially inner ring [(13)] is recessed at its lateral flanks [(17, 18)] at least in sections relative to the surfaces defined by the lateral flanks [(9)] of the pulley body [(2)].

23. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the radially inner ring [(13)] contains a plurality of through-openings [(25)], which run in the axial direction and are distributed equidistantly along the circumference.

24. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wher in** the radially inner ring [(13)] has little internal damping.

25. (Once amended) The pulley as claimed in claim [1] **2**, [characterized in that] **wherein** the distance between the lateral flanks [(33, 34)] of the radially outer ring [(15)] is equal to the clearance distance between the flange [disks (12)] **disk** at this location.

26. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** at least the radially inner ring [(13)] contains a textile reinforcement in the vicinity of its inner circumferential surface [(16)].

27. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** a clamping device [(61)] is assigned to the tire [(3)], by means of which clamping device [(61)] the tire [(3)] can be radially pretensioned on the outer circumferential surface [(8)] of the pulley body [(3)] [[sic]].

28. (Once amended) The pulley as claimed in claim [26] **27**, [characterized in that] **wherein** the clamping device [(61)] has an annular, essentially rotationally symmetrical form with a radially inner and a radially outer surface [(73. 74)].

29. (Once amended) The pulley as claimed in claim [26] **27**, [characterized in that] **wherein** the clamping device [(61)], relative to the radial direction, is fitted in between the radially inner ring [(13)] and the outer circumferential surface [(8)] of the pulley body [(3)] [[sic]].

30. (Once amended) The pulley as claimed in claim [26] **27**, [characterized in that] **wherein** the clamping device [(61)], relative to the radial direction, is fitted in between the radially inner ring [(13)] and the reinforcing ring [(14)].

31. (Once amended) The pulley as claimed in claim [26] **27**, [characterized in that] **wherein** the clamping device [(61)], relative to the axial direction of the pulley body [(3)], is split into two **annular** parts [(71, 72)].

32. (Once amended) The pulley as claimed in claim 30, [characterized in that] **wherein** the radially inner ring [(13)], relative to the axial direction of the pulley body [(3)] [[sic]], is split into two parts [(13a, 13b)], and in that in each case one part [(13a, 13b)] of the radially inner ring [(13)] sits on the corresponding part [(71, 72)] of the clamping device [(61)].

33. (Once amended) The pulley as claimed in claim [26] **27**, [characterized in that] **wherein** the clamping device [(61)] bears an elastomeric coating [(77)] on its radially inner surface [(73)], said elastomeric coating [(77)] being cohesively connected to the clamping device [(61)].

34. (Once amended) The pulley as claimed in claim [32] **33**, [characterized in that] **wherein** the elastomeric coating [(77)] is made of the same material as the radially inner ring [(13)].

35. (Once amended) The pulley as claimed in claim [26] **31**, [characterized in that] **wherein** each annular part [(71, 72)] of the clamping device [(61)] has a frustoconical outer form and a frustoconical bore [(73)], the radial thickness at one axial end [(75)] of each annular part [(71, 72)] being smaller than at the other axial end [(76)], and in that a ring is obtained in the assembled state, which ring, relative to its axial extent, is constricted approximately in the center.

36. (Once amended) The pulley as claimed in claim [26] **31**, [characterized in that] **wherein** the two **annular** parts [(71 [lacuna])] are screwed together by means of screws [(83)].

37. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the outer circumferential surface [(8)] of the pulley body [(3)] [[sic]] forms a double cone, which has the largest diameter at the intersection [(65)] between the two cones.

38. (Once amended) The pulley as claimed in claim 1, [characterized in that] **wherein** the outer circumferential surface [(8)] of the pulley body [(3)] [[sic]] forms a cylindrical surface.